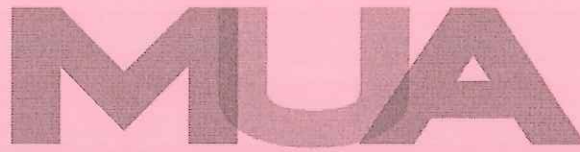


The
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CERTIFICATE UNIVERSITY EXAMINATIONS
SCHOOL OF MANAGEMENT AND LEADERSHIP
CERTIFICATE IN INFORMATION COMMUNICATION
TECHNOLOGY

CIT 102 : INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS

DATE: 8TH AUGUST 2018

DURATION: 2 HOURS

MAXIMUM MARKS: 70

INSTRUCTIONS:

1. Write your registration number on the answer booklet.
2. **DO NOT** write on this question paper.
3. This paper contains **SIX (6)** questions.
4. Question **ONE** is compulsory.
5. Answer any other **FOUR** questions.
6. Question **ONE** carries **30 MARKS** and the rest carry **10 MARKS** each.
7. **Write all your answers in the Examination answer booklet provided**

QUESTION ONE

Study the relation below carefully and answer the questions that follow:

- a) The relation below indicates a store with its attributes, study it and answer the questions that follow.

RELATION: STORES

Store-ID	Phone	Location	No-Bins
ST-A	6740394	Dublin	200
ST-B	8739404	Galway	310
ST-C	6372983	Dublin	75
ST-D	8393044	Cork	105

- i. Create the new relation R1 such that it selects all tuples for stores that are located in Dublin (3marks)
- ii. Create a new relation R2 such that

R2 = PROJECT STORES OVER Store-ID, Location (3marks)

- iii. Given the following operation

R4 = PROJECT STORES OVER Location

What would the relation **R4** look like? (3marks)

- iv. Given a new relation,

RELATION: ITEMS

Item-No	Qty	Store-ID
I1	50	ST-A
I2	17	ST-A
I3	20	ST-B
I4	11	ST-C

Create a new relation R3 such that

R3= JOIN STORES, ITEMS OVER Store-ID (3marks)

v. Join the relations ITEMS to STORES using the operator:

R5 = JOIN STORES, ITEMS OVER Store-ID (3marks)

- b) Explain whether the above relation is an equijoin or a natural join. (3marks)
- c) State the meaning of a relational language? Enumerate the two main relational languages and indicate which one is used in the above example.

(5marks)

- d) List seven properties of the relation above (7marks)

QUESTION TWO

a) Explain the following relational data model terms: (6marks)

- i. Relation schema
- ii. Relational database schema
- iii. Domain
- iv. Relation instance
- v. Relation cardinality
- vi. Relation degree.

What are the responsibilities of a Database Management Administrator? (4marks)

QUESTION THREE

- a) Discuss the following limitations of the file-based approach to data management
- i. Data redundancy and inconsistency
 - ii. Data isolation
 - iii. Difficulty in accessing data

(6marks)

- b) List four facilities provided by a database management system (4marks)

QUESTION FOUR

- a) List and briefly describe the common record- based logical data models (4 marks)

- b) Normalize the following table into 1NF, 2NF AND 3NF normal forms (6 marks)

QUESTION FIVE

- a) Explain Relational Algebra. (2 marks)
- b) Demonstrate relational algebra operations that can be performed (8 marks)

QUESTION SIX

- a) Discuss the differences between the candidate keys and the primary key of a table. (2 marks)
- b) Explain a foreign key (2 marks)
- c) Assess the relationship between foreign keys and candidate keys as used in databases (6 marks)